



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/843,014	04/26/2001	Risto Vaisanen	297-010299-US(PAR)	8402
2512	7590	03/23/2004	EXAMINER	
PERMAN & GREEN 425 POST ROAD FAIRFIELD, CT 06824			PHAN, HUY Q	
			ART UNIT	PAPER NUMBER
			2685	5
DATE MAILED: 03/23/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/843,014

Applicant(s)

VAISANEN, RISTO

Examiner

Huy Q Phan

Art Unit

2685

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1 and 3-13 are rejected under 35 U.S.C. 102(a) as being anticipated by Ohba et al. (EP-0,417,528 A2).

Regarding claim 1, Ohba et al. disclose in figures 2 and 6, a method for receiving a frequency modulated signal (col. 7, line 14), characterized in that the radio frequency signal is mixed (3 and 4) into a low-frequency signal, the falling (Q) and rising (I) edges of said low-frequency, modulated signal are detected (11 and 13), a second signal (20) is formed on the basis of said edge detection (col. 9, line 40-col. 10, line 5), the frequency of the second signal being twice the frequency of said low-frequency signal (col. 11, lines 6-40), and said second signal is frequency detected (11 and 13) to form a demodulated signal (col. 11, lines 28-40).

Regarding claim 3, Ohba et al. disclose the method as recited in the rejection of claim 1, characterized in that the processing of the frequency modulated signal also includes the following steps: the signals are phased in at least two branches (I and Q), the signals are summed into one branch (col. 10, lines 30-31), the signal is low pass

filtered (col. 8, line 3), amplified (9a and 9b) and demodulated (20).

Regarding claim 4, Ohba et al. disclose in figures 2 and 6, a method as recited in the rejection of claim 1, characterized in that the demodulation of the frequency modulated signal includes the following steps: the modulated signal (col. 7, line 14) is divided into two branches, the first one (I) for the detection of the rising signal edge and the second one (Q) for the detection of the falling signal edge; the rising edge of the modulated signal is detected (11) in the first branch, the modulated signal is inverted and the rising edge of the inverted (col. 10, line 38-col. 11, line 40), modulated signal is detected (13) in the second branch, and the signals processed in the first and the second branch are combined (col. 10, lines 30-31).

Regarding claim 5, Ohba et al. disclose in figures 2 and 6, a method as recited in the rejection of claim 1, characterized in that the demodulation of the frequency modulated signal includes the following steps: the modulated signal is divided into two branches, the first one (I) for the detection of the rising signal edge and the second one (Q) for the detection of the falling signal edge, the rising edge of the modulated signal is detected (11) in the first branch, the falling edge of the modulated signal is detected (13) in the second branch, and the signals processed in the first and the second branch are combined (20).

Regarding claim 6, Ohba et al. disclose in figures 2 and 6, a method as recited in

the rejection of claim 1, characterized in that pulses of a predetermined length are formed on the basis of said edge detection (col. 11, line 41-col. 12, line 30), and the pulses are summed to form said second signal (20).

Regarding claim 7, Ohba et al. disclose in figures 2 and 6, an arrangement for receiving a frequency modulated signal (col. 7, line 14), characterized in that it comprises means for mixing a radio frequency signal into a low-frequency signal, and demodulator means (20), which comprise means for detecting (11 and 13) the falling and rising edges of said low-frequency signal, means for forming a second signal (20) on the basis of said edge detection, the frequency of the second signal being twice (col. 11, lines 6-40) the frequency of said low-frequency signal, and means for the frequency detection (11 and 13) of said second signal.

Regarding claim 8, Ohba et al. disclose in figures 2 and 6, an arrangement as recited in the rejection of claim 7, characterized in that it comprises mixers (3 and 4), 0 degree and 90 degree phase shifters (2) for mixing the signal of at least two branches (I and Q) with the signal of the local oscillator LO (6).

Regarding claim 9, Ohba et al. disclose in figures 2 and 6, an arrangement as recited in the rejection of claim 7, characterized in that it comprises 0 degree and 90 degree phase shifters (2), an adder (col. 10, lines 30-31) and a demodulator (20) of the frequency modulated signal.

Regarding claim 10, Ohba et al. disclose in figures 2 and 6, an arrangement as recited in the rejection of claim 7, characterized in that the demodulator of the frequency modulated signal comprises two branches (I and Q), of which the upper branch (I) comprises a pulse detector (11) for detecting the rising edge of the frequency modulated signal to be demodulated, and the lower branch (Q) comprises an inverter (col. 10, line 36-48 and col. 11, line 41-col. 12, line 30) and a pulse detector (13) connected in series for detecting the falling edge of the frequency modulated signal to be demodulated, and an adder (col. 10, lines 30-31) that combines the branches.

Regarding claim 11, Ohba et al. disclose in figures 2 and 6, an arrangement as recited in the rejection of claim 7, characterized in that the demodulator (20) of the frequency modulated signal comprises two branches(I and Q), of which the upper branch (I) comprises a pulse detector (11) for detecting the rising edge of the frequency modulated signal to be demodulated, and the lower branch (Q) comprises a pulse detector (13) active on the falling edge of the signal for detecting the falling edge of the frequency modulated signal to be demodulated, and an adder (col. 10, lines 30-31) that combines the branches.

Regarding claim 12, Ohba et al. disclose in figures 2 and 6, an arrangement as recited in the rejection of claim 7, characterized in that the means for detecting (11 and 13) the edges of a low-frequency signal comprise a pulse generator for forming a pulse

of a specified length as triggered by the edge of a low-frequency signal (col. 11, line 41- col. 13, line 38).

Regarding claim 13, Ohba et al. disclose a mobile station (col. 1, lines 8-10), characterized in that it comprises an arrangement according to claim 7 for receiving a frequency modulated signal (col. 7, line 14).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohba et al. in view of applicant's admitted prior art.

Regarding claim 2, Ohba et al. disclose all the limitations as recited in the rejection of claim 1. Ohba et al. also disclose the processing of the frequency modulated signal includes the following steps: the signal is down-converted in at least two branches (I and Q) with phase-shifted (2) local oscillator signals LO (6), the signal is low pass filtered (col. 8, line 3) and amplified (9a and 9b). Ohba et al. fail to particularly show the antenna signal being filtered with a band pass filter, and amplified. However, the applicant's admitted prior art clearly recites in figure 1, the antenna signal being filtered with a band pass filter (2), and amplified with an amplifier (3); therefore, it would

have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the system of Ohba et al. by specifically having antenna signal being filtered with a band pass filter, the signal being amplified for the purpose of filtering out unwanted signal and increasing the signal strength in improving the quality and reliability of the signal processing apparatus.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


- a) Moore et al. (US-6,035,186) disclose integrated receiver.
- b) McIntosh (US-5,381,446) discloses demodulator.
- c) French et al. (US-4,864,643) disclose radio receiver.
- d) Hornak et al. (US-5,678,222) disclose modulation and frequency conversion.
- e) Leitch (US-4,910,467) discloses method and apparatus for decoding a quadrature modulated signal.
- f) Baltus et al. (US-5,887,247) disclose the receiving radio apparatus.
- g) Gehring et al. (US-4,944,025) disclose the conversion FM receiver.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huy Q Phan whose telephone number is 703-305-9007. The examiner can normally be reached on 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Urban F Edward can be reached on 703-305-4385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HP
Mar. 10, 2004


EDWARD F. URBAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600